Final

Contingency Plan for the Management of Abrasive Blast Material and Unknown Hazardous Materials, Parcel A′ Phase 1 Development, Hunters Point Shipyard

Prepared for

Lennar/Bayview Hunters Point

April 2005

CH2MHILL
155 Grand Avenue Suite 1000
Oakland, California 94612

Contents

Acronyms and Abbreviations ..... **iv**

1.0 Introduction **1-1**
1.1 Document Objectives 1-1

2.0 Background **2-1**
2.1 Site Description 2-1
2.2 Site History 2-1
2.3 ABM Description 2-2
2.4 Historical Use of Abrasive Blast Material at HPS 2-2
2.5 Other Unknown Hazardous Materials 2-3

3.0 Identification and Notification Procedures **3-1**
3.1 Identification of ABM 3-1
3.2 Site Controls 3-1
3.3 Training 3-1
3.4 Preliminary Identification of ABM 3-2
3.5 Monitoring of Grading Activities 3-2
3.6 Verification of ABM 3-2
3.7 Notifications 3-3
3.8 Preliminary Identification of Unknown Hazardous Materials 3-3
3.9 Verification of Unknown Hazardous Materials 3-3
3.10 Notification of Unknown Hazardous Materials 3-4

4.0 Sampling and Analysis **4-1**
4.1 Field Screening and Sample Collection 4-1
4.1.1 Radiological Screening 4-1
4.1.2 Excavation 4-1
4.1.3 Sample Collection 4-2
4.1.4 Equipment Decontamination 4-2
4.1.5 Health and Safety 4-3
4.1.6 Sample Documentation and Tracking 4-3
4.1.7 Sample Handling and Custody 4-4
4.2 Analysis 4-5

5.0 Material Management **5-1**
5.1 Storage Time Limit 5-1
5.2 Waste Storage Areas 5-1
5.3 Labels 5-1
5.4 Methods to Store Wastes 5-2
5.4.1 Drums/Small Containers 5-2
5.4.2 Stockpiles 5-3
5.4.3 Roll-off Bins 5-3

5.5 Waste Storage Area Inspections 5-3
5.6 Additional Requirements for Low-level Radioactive Wastes 5-4
5.7 Additional Requirements for the Management of USTs 5-4

6.0 Transportation and Disposal 6-1
6.1 Transportation and Disposal of Waste Stream 6-1
6.2 Additional Requirements for Low-level Radioactive Wastes 6-1

7.0 Recordkeeping and Reporting 7-1
7.1 Initial Notifications and Reporting 7-1
7.2 Location 7-1
7.3 Analytical Results 7-1
7.4 Transportation and Disposal Log 7-1

8.0 References 8-1

Attachments

1 Material Specification Sheet and Material Safety Data Sheet for Black Beauty® Coal Slag Abrasive
2 ABM Notification Form

Figures

3-1 Parcel A′ Hillside Utility Corridors
3-2 Parcel A′ Hilltop Utility Corridors

Tables

3-1 Hunters Point Shipyard Contact Information
4-1 Radioactive Monitoring Action Levels
4-2 RCRA Toxicity Characteristic Criteria
4-3 California (non-RCRA) Toxicity Characteristic Criteria

Acronyms and Abbreviations

ABM	abrasive blasting material
CCR	California Code of Regulations
DTSC	Department of Toxic Substances Control
GPS	Global Positioning System
HPS	Hunters Point Shipyard
Navy	United States Department of the Navy
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
SFDPH	San Francisco Department of Public Health
STLC	soluble threshold limit concentration
UST	underground storage tank
TCLP	toxicity characteristic leaching procedure
TTLC	total threshold limit concentration
USEPA	United States Environmental Protection Agency

1.0 Introduction

1.1 Document Objectives

CH2M HILL prepared this contingency plan for abrasive blast material (ABM) in accordance with the requirements of the permit process established in Article 31 of the City and County of San Francisco Health Code. This plan is submitted by Lennar/Bayview Hunters Point and CH2M HILL as part of the planning process for upcoming Phase 1 development at the Hunters Point Shipyard (HPS) Parcel A' (the site) in San Francisco, California. This plan further satisfies the specific requirement to prepare a construction contingency plan for unknown hazardous materials described in Mitigation Measure 7.E. of the *Final Environmental Impact Report for the Disposal and Reuse of Hunters Point Shipyard* (Navy 2001)

This plan addresses procedures that will be implemented if ABM and/or other unknown, potentially hazardous materials (which may include underground storage tanks [USTs] and associated piping) are found during the development of the horizontal infrastructure at the site. In addition, this plan describes management and disposal of these materials and special measures that will be implemented to monitor for the presence of ABM.

2.0 Background

2.1 Site Description

Parcel A is approximately 75 acres and is located in the northern portion of the HPS. Historically, the dominant land use of Parcel A was residential and non-industrial. Currently, approximately 64 buildings are present on Parcel A, 45 of which are former residences. In addition to the 64 buildings, the foundations of 43 former structures are also located in Parcel A. Parcel A contains storm drains, steam lines, a sanitary sewer system, electrical transformers, and an active natural gas distribution system that serves Buildings 915 and 916. Asphalt, buildings, or other structures cover most of the lowlands. Open space at Parcel A is vegetated or bare soil.

Parcel A consists of Parcel A-1 (also known as Parcel A East) and Parcel A-2 (also known as Parcel A West) of the Hunters Point Shipyard, as defined in two separate Quitclaim Deeds both recorded on December 3, 2005. Parcel A is approximately 75 acres and is located in the northern portion of the HPS. The Phase I horizontal development project will be confined to Parcel A' Hilltop and Parcel A' Hillside.

2.2 Site History

The United States Department of the Navy (Navy) acquired the title to the land known as HPS in 1940 and began developing its shipyard activities, including shipbuilding, repair, and maintenance. Buildings at HPS included office and commercial buildings such as facilities for warehousing, fuel storage and distribution, and machining and metal fabrication. Between 1976 (the point at which the Navy ceased its operations) and 1986, the Navy leased most of HPS to a private ship-repair company, which conducted activities similar to the Navy's.

HPS was divided into six parcels (Parcels A, B, C, D, E, and F) for purposes of remediation. Multiple investigations have been performed at HPS for over 20 years. Between 1984 and 1993, initial preliminary assessments were conducted facility-wide at HPS. Based on the results of these initial preliminary assessments, subsequent preliminary assessments were performed within Parcel A to further evaluate possible sites for inclusion in the Parcel A remedial investigation program. In 1995, the Navy performed a remedial investigation of Parcel A to characterize the nature and extent of chemical contamination in the parcel. The United States Environmental Protection Agency (USEPA), the Department of Toxic Substance Control (DTSC), and Regional Water Quality Control Board (RWQCB) participated and were consulted throughout the Parcel A remedial investigation process and the development of the Parcel A Record of Decision (ROD). USEPA concurred with the findings of the Parcel A investigations on November 8, 1995 and signed the Parcel A ROD on November 29, 1995. The DTSC and RWQCB also concurred and signed the Parcel A ROD on November 28, 1995. The Parcel A ROD approved by the USEPA and co-regulatory agencies is the decision document demonstrating that the Navy has taken all necessary

remedial actions to comply with Section 120(h)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

A final Finding of Suitability to Transfer was signed in January 2001. A revision to the Finding of Suitability to Transfer was completed in March 2002; a second revision was completed in March 2004; and a third and final revision completed in September 2004. These revisions include a boundary map update for Parcel A, as well as additional information about radiological clearance and other historic activities within Parcel A.

2.3 ABM Description

A variety of ABM is available for industrial use. ABM is generally a non-cohesive, granular material and typically may have a characteristic green or black color. Granulated ABM made by all manufacturers is chemically inert; therefore, it does not have hazardous waste characteristics of flammability, corrosivity, or reactivity.

Historically, silica sands were commonly used as ABM, though current practices limit their use due to safety concerns related to silica dust. Other common ABMs used at naval facilities include Green Diamond®, a ferro-nickel slag produced as a byproduct of nickel production from lateritic ore, and Black Beauty®, a coal slag abrasive manufactured and marketed by Reed Minerals, a subsidiary of Harsco Corporation of Wormsleyburg, Pennsylvania. A material specification and Material Data Safety Sheet for Black Beauty® are provided in Attachment 1

Due to the use of lead-based paint on ships, elevated levels of metals, particularly lead, may be found in used ABM. Other constituents found in ABM may include chromium, copper, nickel, and zinc.

Coal slag sometimes contains low levels of naturally-occurring radionuclides (radium and its daughter products), which may be concentrated during the ABM manufacturing process, resulting in ABM with relatively low, but elevated radiation levels as compared to background.

2.4 Historical Use of Abrasive Blast Material at HPS

Historically, sandblasting of ships occurred at HPS to prepare ship hulls for repainting and other repairs. Wet sandblasting is also specifically mentioned as a method used for decontamination of irradiated ships involved in Operation Crossroads in the late 1940s and early 1950s, as documented in the *Draft Final Historical Radiological Assessment*, *Volume II* (NAVSEA 2004).

Anecdotal evidence suggests that ABM may have been used at HPS as bedding, aggregate, or backfill material (e.g., for pipelines, former fill areas, roadways, and driveways). Typically, the Navy did not keep records documenting the placement locations, so the exact locations and quantities of ABM are not known. However, ABM has been encountered during site characterization and remediation activities.

In 1995, a material described as black sandblast grit was excavated from the Installation Restoration Site 59 Jerrold Avenue Investigation. This material was not analyzed for

radioactivity but was analyzed for Contract Laboratory Program semivolatile organic compounds, pesticides, and polychlorinated biphenyls; total petroleum hydrocarbons as diesel fuel and as motor oil; and metals. The material was excavated until confirmation samples collected from the excavation area contained minimal concentrations of any constituents of concern.

In 1999, black ABM was excavated during remedial activities at Installation Restoration Site 7 (Parcel B). A composite sample of the material was collected and sent to a laboratory for alpha spectral and gamma spectral analyses. The results of these analyses indicated that radiation was present at background levels and that there was no radiological hazard associated with the material.

In any instance of discovery of previously unknown ABM, there is the potential for some low levels of contamination, either metals or low-level radioactivity. The levels of contamination may not pose a risk to human health, but this plan has been developed to take a conservative approach and to establish procedures in the event that ABM is encountered.

2.5 Other Unknown Hazardous Materials

As previously described in Section 2.2, the site has been characterized and found to be suitable for transfer and use for residential development. The levels of contamination remaining on site have been found not to pose a risk to human health, but this plan has been developed to take a conservative approach and to establish procedures in the event that previously unknown hazardous materials are encountered during the course of redevelopment activities. Based on the historical use of Parcel A as housing, the types of previously unknown hazardous materials might potentially be expected to consist of isolated spills of small volumes of petroleum, paints, pesticides, herbicides, other household products, or previously-unidentified USTs and associated piping.

3.0 Identification and Notification Procedures

3.1 Identification of ABM

The identification procedure for ABM and unknown hazardous materials is a multi-tiered process that will include:

- Site controls to identify likely areas for encountering ABM.
- Personnel training.
- Preliminary identification of potential ABM and unknown hazardous materials by equipment operator/site worker.
- Verification of ABM and unknown hazardous materials by soils technician.
- Implementation of radiological screening and ABM sampling and management procedures.

3.2 Site Controls

The Phase I work at Parcel A will consist of demolition of existing utilities and mass regrading of a large part of Parcel A' Hilltop and A' Hillside Areas shown in Figures 3-1 and 3-2. It is during these activities that ABM and other unknown hazardous materials are most likely to be encountered. ABM is most likely to be found in the utility corridors. Any open areas will be cleared of vegetation, and surfacing materials will be removed from areas with existing asphalt, concrete, etc., leaving a "clean" surface at the site prior to the grading operation and providing optimal conditions for equipment operators to observe the materials that are being excavated.

In addition, areas with higher density of subsurface utilities will be physically marked with stakes, flags, or by other means so that operators will be able to identify areas where ABM is more likely. At a minimum, the areas shown on Figures 3-1 and 3-2 will be marked as areas with a higher density of subsurface utilities. Other areas may be added as necessary due to specific field conditions.

3.3 Training

As part of the site-specific health and safety training that will be required of equipment operators and site workers, instruction will be given on how to identify potential ABM and unknown hazardous materials. Training will be conducted by the site safety representative and Lennar's environmental consultant and, at a minimum, include:

- Identification of the areas on site with highest potential to encounter ABM (i.e., areas with a high density of utility corridors as shown on Figures 3-1 and 3-2).

- Description of physical characteristics of ABM and potential chemical and radiological hazards.
- Description of other observations that may indicate the presence of unknown hazardous materials (soil staining, odor, sheen, presence of unidentifiable substances).
- Instructions to modify normal grading procedures in order to conduct work in a manner that allows observation of material being handled.
- Instructions on notification procedures in the event that a potential ABM or unknown hazardous materials are identified.

The San Francisco Department of Public Health (SFDPH) will be notified of the initial and any subsequent training dates a minimum of one week in advance so a representative may attend.

3.4 Preliminary Identification of ABM

After site-specific training is provided, as described above, equipment operators and site workers will use the soil observation procedure to provide constant visual monitoring of the soils being managed. Due to potential variability in the appearance of ABM, workers will initially be instructed to identify all significant pockets of sandy material. When potential ABM is identified, the operator will notify his or her supervisor or the on-site soils technician for verification of the ABM.

3.5 Monitoring of Grading Activities

In order to ensure compliance with ABM identification procedures covered in preliminary training, the on-site soils technician or project environmental consultant will conduct random verification inspections. Initially, these inspections will be conducted at least daily, and documented in the daily site reports. Observations will include spot checking of materials being handled, observation of the equipment operators' work procedures, and general verification that grading is proceeding in a manner that ensures that ABM or other unknown hazardous materials will be correctly identified.

If the inspector notes unacceptable actions on the part of the equipment operator, he or she will immediately notify the site supervisor and the equipment operator and reiterate procedures covered in the training. If continuing problems are observed, work will be halted in the utility corridors, procedures will be modified, and personnel retrained as necessary. SFDPH will be notified of any modifications to the procedures implemented.

3.6 Verification of ABM

A full-time soils technician will be on site during all grading activities to monitor and provide quality control for the earthwork. The technician will examine sandy materials identified as potential ABM for additional indications that it may be ABM such as color, granularity, and presence of paint chips or other characteristics. If the material is determined to be a natural sand or clean pipe backfill, the soils technician will clear the area

for the resumption of work. Cleared areas will be documented in the soils technician's daily report. If the soils technician identifies the material as ABM, the site safety representative will be notified, and the area will be marked and vacated.

Implementation of sampling and ABM management procedures are described in the following section.

3.7 Notifications

The site safety representative upon confirming the presence of ABM will immediately notify the entities shown in Table 3-1.

TABLE 3-1
Hunters Point Shipyard Contact Information
Hunters Point Shipyard, San Francisco, California

Function/Title	Name	Phone Number
Lennar/BVHP Project Director	Gary McIntyre	415/995–4817 Gary.McIntyre@Lennar.com
CH2M HILL Project Environmental Consultant	Phil Burke	510/587-7689 Pburke@ch2m.com
SFDPH Hunters Point Project Coordinator	Amy Brownell	415/252-3967 Amy.Brownell@sfdph.org
Navy Hunters Point Project Manager	Patrick Brooks	619/532-0930 george.brooks@navy.mil

3.8 Preliminary Identification of Unknown Hazardous Materials

After site-specific training is provided as described above, equipment operators and site workers will provide constant visual monitoring of the soils being managed. Workers will be instructed to identify all significant anomalies such as discoloration, odor, sheen, etc. When potential hazardous materials are identified, the operator will notify his or her supervisor or the on-site soils technician for verification of the unknown hazardous material.

3.9 Verification of Unknown Hazardous Materials

As described in Section 3.5, a full-time soils technician will be on site during all grading activities to monitor and provide quality control for the earthwork. The technician will examine any substances identified as potential hazardous materials for additional indications that it may be hazardous. If the material is determined to be natural sand or other identifiable material, the soils technician will clear the area for the resumption of work. If the soils technician is unable to identify the material, the site safety representative will be notified, and the area will be marked and vacated.

The project environmental consultant will be notified and mobilized to the site to perform additional sampling and testing to preliminarily characterize the unknown material. Implementation of sampling and management procedures for unknown hazardous materials are described in Section 3.10.

3.10 Notification of Unknown Hazardous Materials

The site safety representative or project environmental consultant, upon confirming the presence of unknown hazardous materials, will immediately notify the entities listed in Table 3-1 of this report.

4.0 Sampling and Analysis

4.1 Field Screening and Sample Collection

Upon verification of the presence of ABM and/or unknown hazardous materials, the site safety representative will be notified. In addition to the site-specific health and safety requirements and field monitoring procedures being performed in the designated work area, the safety representative or Lennar's environmental consultant will perform additional monitoring and sampling upon the discovery of ABM material and/or unknown hazardous materials. In the case of the discovery of ABM, additional monitoring will include radiological screening prior to excavation and periodically during sampling (*in situ* or from stockpiles).

4.1.1 Radiological Screening

Radiological monitoring of the ABM will be performed using a Victoreen V190 Radiation Monitor. Monitoring will be conducted both prior to excavation and while the material is stockpiled in accordance with the radiation monitor manufacturer's instructions. Table 4-1 presents the action levels that will be used when monitoring the site for radioactive materials.

TABLE 4-1
Radioactive Monitoring Action Levels
Hunters Point Shipyard, San Francisco, California

Monitoring Equipment	Frequency of Monitoring	Monitoring Results/Action Levels
Victoreen V190 Radiation and Count Meter with GM detectors	Initially on ABM at work site; periodically during sampling	Background: Continue work >3x Background: Consult Radiation Health Specialist [a] >2 mR/Hr: Establish radioactive exclusion zone [a]

[a] AIf radiation levels above background are detected, a post-ABM excavation screening level will be established by the Navy to verify that all ABM has been excavated.

4.1.2 Excavation

ABM is an unknown environmental condition for which the Navy retains responsibility at Parcel A; therefore, the Navy will be immediately notified and consulted regarding management of the ABM. It is anticipated that the Navy's contractor will excavate and remove ABM from Parcel A for stockpiling while awaiting analysis.

For other unknown hazardous materials, the results of the preliminary identification by the environmental consultant will be provided to SFDPH, and a determination will be made whether the unknown substance is an environmental condition for which the Navy retains responsibility. If the unknown hazardous material is determined to be the Navy's responsibility, the Navy will be notified.

Other unknown hazardous materials not managed by the Navy's contractor, will be excavated and stored or stockpiled as described below while awaiting analysis. The limits of excavation of other hazardous material will be confirmed by telephone conference with SFDPH, the Navy and regulatory agencies prior to starting excavation. Excavation will be supervised by the soils technician, safety representative, or environmental consultant who will also measure and note the location of the limits of the hazardous material removed and left in place (if any). The limits of excavated material will be documented by survey or global positioning system (GPS).

Until the unknown hazardous material is characterized, it will be treated as hazardous waste and segregated from non-hazardous wastes and other materials. If the unknown materials are determined to be a non-hazardous solid waste through sampling, requirements for storage described below will be adjusted appropriately. In any case, the minimum requirements for materials stockpiling specified in the Construction Stormwater Pollution Prevention Plan will be met.

4.1.3 Sample Collection

It is anticipated that the Navy's contractor will characterize the excavated ABM for disposal. However, if Lennar's contractor performs the excavation, the ABM and/or unknown hazardous materials container or stockpile will be sampled by Lennar's environmental consultant, CH2M HILL, to collect a representative sample for characterization purposes. If ABM and/or unknown hazardous materials are stockpiled, the stockpile will be sampled at the surface and at one-foot intervals to the total depth of the stockpile. If the ABM and/or unknown hazardous materials are stored in a roll-off container, samples will be collected from different depths and areas within the roll-off and composited into a representative sample prior to chemical analyses in accordance with the requirements of the disposal facility.

All sample equipment will be decontaminated properly prior to use. The samples will be collected using a stainless-steel hand trowel, hand auger, or equivalent equipment. Samples will be placed into laboratory-supplied, certified-clean, glass jars and will be filled to the top. Each sample container will be closed as soon as it is filled and chilled for shipment to an off-site California-certified laboratory.

4.1.4 Equipment Decontamination

Sampling equipment must be thoroughly decontaminated to ensure the quality of the samples collected. All equipment that encounters potentially-contaminated samples will be decontaminated. Disposable equipment intended for one-time use will not be decontaminated but will be packaged for disposal. Decontamination will occur prior to each use of the equipment.

Used personal protective equipment (PPE) will be double-bagged and placed in a municipal refuse dumpster on site. Any PPE and disposable equipment to be disposed of that can still be reused will be rendered unusable before disposal into the dumpster.

4.1.5 Health and Safety

Sampling activities will be performed by appropriately-trained personnel in accordance with a site-specific health and safety plan for sampling activities (to be developed separately). Sampling will be conducted by Occupational Safety and Health Administration 40-hour Hazardous Waste Operations and Emergency Response-trained personnel, who will be included in the CH2M HILL medical surveillance program.

4.1.6 Sample Documentation and Tracking

Sample containers will be received from the laboratory pre-labeled and pre-preserved. The sample identification and date and time of sampling will be entered on the label immediately after collection. The labels will be secured using clear tape to maintain the identification of each sample.

Vital information regarding the collection of each sample will be recorded in a field log book or similar notebook. The logbook should be bound with consecutively-numbered pages. All entries will be legibly written in black ink and signed and dated by the individual making the entries. Factual and objective language will be used. All entries will be complete and accurate enough to allow reconstruction of each field activity. The logbook will contain:

- GPS or surveyed coordinates for each sample location.
- Sample location and description. (A sketch with measured distances from reference points will be recorded if there is no established identification for the sample location. Sketch should include a north arrow, approximate scale, and the nearest cross streets or other landmarks.)
- Sample identification.
- Sampler's name.
- Name of supervisor in charge.
- Date and time of sampling.
- Sample designation as composite or grab.
- Sample matrix.
- Type and identification of sampling equipment used.
- Field observations that may be relevant to the analysis or sample integrity (odor, color, weather conditions, etc.).
- Preservative used.
- Lot numbers of sample containers, chain-of-custody number, custody seal number.
- Shipping arrangement.
- Destination laboratory.

4.1.7 Sample Handling and Custody

The contracted analytical laboratory will provide the required sample containers. All containers will have been cleaned and certified free of the analytes of concern for this project. No sample containers will be reused. The contracted laboratory will add preservatives, if required, prior to shipping the sample containers to the field. The laboratory, upon receipt of the samples, will verify the adequacy of preservation and will add additional preservative, if necessary.

Precautions must be taken to preserve and ensure the integrity of all samples from the time of collection through analysis. Sample custody records must be maintained both in the field and in the subcontractor laboratory. A sample is considered to be in a person's custody if it is either in his or her physical possession or view, locked up, or kept in a secured and restricted area. Until the samples are shipped, sample custody will be the responsibility of the sampling team leader.

Chain-of-custody records document sample collection and shipment to the laboratory. A chain-of-custody form will be completed in triplicate for each sampling event. The original and second copy will be delivered with the sample-shipping cooler, and the third copy will be retained in the field documentation files. The chain-of-custody form will identify the contents of each shipment and maintain the custodial integrity of the samples. All chain-of-custody forms will be signed and dated by the responsible sampling team personnel. The "relinquished by" box will be signed by the responsible sampling team personnel, and the date, time, and air bill number will be noted on the chain-of-custody form.

A self-adhesive custody seal will be placed across the lid of each sample to maintain sample integrity until the laboratory opens it. The shipping coolers containing the samples will be sealed with a custody seal prior to shipping. All custody seals will be signed and dated by the responsible sampling team personnel.

At a minimum, the chain-of-custody form must document:

- Unique sample identification.
- Date and time of sample collection.
- Source of sample (including name, location, and sample type).
- Analyses required.
- Name of sampler.
- Custody transfer signatures and dates and times of sample transfer from the field to transporters and to the laboratories.
- Bill of lading or transporter tracking number (if applicable).
- Name and contact details (facsimile and/or email) of person to whom laboratory results will be reported.

Once samples are received, custody must be maintained at the laboratory until all tests are complete. This will be accomplished using an internal custody system that requires samples

to be kept in a secured and restricted area when not in use and to be checked out and checked back in by the analysts who use the samples. The laboratory must maintain internal custody records for each sample as part of the documentation file.

Prior to shipment of the samples, the container lids will be checked for tightness, and if the container is not full, the outside of the container will be marked with indelible ink at the sample volume level. Sample bottles will be double-bagged in heavy-duty plastic. Glass containers will be covered with bubble wrap to prevent breakage.

All previous labels used on the sample shipping cooler will be removed. The drain plugs will be sealed with fiberglass tape (outside and inside) to prevent melting ice from leaking. A cushioning layer of Styrofoam (or like material) will be placed at the bottom of the cooler to prevent breakage during shipment. The cooler will be lined with a large plastic bag (same type used to contain samples).

All ice will be double-bagged in a zip-locked plastic bag. The chain-of-custody form will be placed in a zip-locked bag. Samples will be placed in an upright position in the cooler. Ice will be placed on top of samples and between samples. Void space between samples should be filled with Styrofoam (or like material). The cooler lid will be taped with strapping tape, encircling the cooler several times. Custody seals will be placed on four sides of the cooler lid (two seals in front, one back, and side). "This Side Up" arrows will be placed on the sides of the cooler.

Sample coolers will be transported to the laboratory immediately after sample collection. Intermediate stops should be avoided, with the exception of emergencies only, in which case the situation should be noted in the field notebooks. The laboratory should be notified prior to the implementation of this sampling and analysis plan to assist with sample transport.

4.2 Analysis

ABM and/or unknown hazardous material samples will be analyzed to characterize each sample as solid waste or hazardous for disposal purposes. A solid waste is considered a Resource Conservation and Recovery Act (RCRA) hazardous waste if the waste exhibits any of the characteristics of ignitability, corrosivity, reactivity, or toxicity identified in Title 22 of the California Code of Regulations (22 CCR) 66261.21, 66261.22(a)(1), 66261.22(a)(2), 66261.23, and 66261.24(a)(1). As previously mentioned, ABM is inert (is not hazardous based on ignitability, corrosivity or reactivity), so determinations will focus on whether the ABM could be classified as a toxicity characteristic waste as defined by constituent concentrations that exceed the toxicity characteristic leaching procedure (TCLP) limits. TCLP is a laboratory procedure used to simulate the way hazardous constituents could leach from a solid waste by subjecting that waste to an acid buffer. If total constituent concentration analyses were performed on a waste sample but TCLP analyses were not, the USEPA standard is to multiply the federal regulatory limit by 20 for comparison with the total values. Table 4-2 presents the TCLP limits and the totals conversion for solids.

TABLE 4-2
RCRA Toxicity Characteristic Criteria
Hunters Point Shipyard, San Francisco, California

USEPA Hazardous Waste Code	Constituent	TCLP Leachate Maximum (mg/L)	Maximum Totals Conversion for Solids (mg/kg)
D004	Arsenic	5.0	100
D005	Barium	100.0	2,000
D006	Cadmium	1.0	20
D007	Chromium (total)	5.0	100
D008	Lead	5.0	100
D009	Mercury	0.2	4
D010	Selenium	1.0	20
D011	Silver	5.0	100
D012	Endrin	0.02	0.4
D013	Lindane	0.4	8
D014	Methoxychlor	10.0	200
D015	Toxaphene	0.5	10
D016	2,4-D	10.0	200
D017	2,4,5-TP Silvex	1.0	20
D018	Benzene	0.5	10
D019	Carbon tetrachloride	0.5	10
D020	Chlordane	0.03	0.6
D021	Chlorobenzene	100	2,000
D022	Chloroform	6.0	120
D023	o-Cresol[a]	200.0	4,000
D024	m-Cresol[a]	200.0	4,000
D025	p-Cresol[a]	200.0	4,000
D026	Cresols[a]	200.0	4,000
D027	1,4-Dichlorobenzene	7.5	150
D028	1,2-Dichloroethane	0.5	10
D029	1,1-Dichloroethylene	0.7	14
D030	2,4-Dinitrotoluene	0.13	2.6
D031	Heptachlor (and epoxide)	0.008	0.16
D032	Hexachlorobenzene	0.13	2.6
D033	Hexachlorobutadiene	0.5	10
D034	Hexachloroethane	3.0	60
D035	Methyl ethyl ketone	200.0	4,000
D036	Nitrobenzene	2.0	40
D037	Pentachlorophenol	100.0	2,000
D038	Pyridine	5.0	100
D039	Tetrachloroethylene	0.7	14
D040	Trichloroethylene	0.5	10
D041	2,4,5-Trichlorophenol	400.0	8,000
D042	2,4,6-Trichlorophenol	2.0	40
D043	Vinyl chloride	0.2	4

[a] If cresol isomers cannot be differentiated, total cresols are used.
mg/L = milligrams per liter.
mg/kg = milligrams per kilogram.

Under the California hazardous waste program, the standards for toxicity characteristic wastes are defined for both total constituent concentrations in the waste and the potential leachate concentrations as simulated by the waste extraction test. Wastes can be classified as non-RCRA, state-only, toxicity characteristic hazardous wastes if they exceed the soluble threshold limit concentration (STLC) or the total threshold limit concentration (TTLC) values listed in 22 CCR 66261.24(a)(2). These values are presented in Table 4-3. For comparison with analyses of environmental samples, 10 times the STLC value is used instead of 20 (the dilution ratio for an STLC is less than for a TCLP). California regulations provide that if total concentrations in the waste are below STLC values, the waste extraction test is not required.

TABLE 4-3
California (non-RCRA) Toxicity Characteristic Criteria
Hunters Point Shipyard, San Francisco, California

Substance [a,b]	STLC (mg/L)	TTLC (mg/kg)
Antimony and/or antimony compounds	15	500
Arsenic and/or arsenic compounds	5.0	500
Asbestos		1.0 (as percent)
Barium and/or barium compounds (excluding barite)	100	10,000 [c]
Beryllium and/or beryllium compounds	0.75	75
Cadmium and/or cadmium compounds	1.0	100
Chromium (VI) compounds	5	500
Chromium (III) compounds	5 [d]	2,500
Cobalt and/or cobalt compounds	80	8,000
Copper and/or copper compounds	25	2,500
Fluoride salts	180	18,000
Lead and/or lead compounds	5.0	1,000
Mercury and/or mercury compounds	0.2	20
Molybdenum and/or molybdenum compounds	350	3,500 [e]
Nickel and/or nickel compounds	20	2,000
Selenium and/or selenium compounds	1.0	100
Silver and/or silver compounds	5	500
Thallium and/or thallium compounds	7.0	700
Vanadium and/or vanadium compounds	24	2,400
Zinc and/or zinc compounds	250	5,000
Aldrin	0.14	1.4
Chlordane	0.25	2.5
DDT, DDE, DDD	0.1	1.0
2,4-Dichlorophenoxyacetic acid	10	100
Dieldrin	0.8	8.0
Dioxin (2,3,7,8-TCDD)	0.001	0.01
Endrin	0.02	0.2
Heptachlor	0.47	4.7
Kepone	2.1	21
Lead compounds, organic	-	13
Lindane	0.4	4.0
Methoxychlor	10	100
Mirex	2.1	21
Pentachlorophenol	1.7	17
Polychlorinated biphenyls	5.0	50
Toxaphene	0.5	5

TABLE 4-3
California (non-RCRA) Toxicity Characteristic Criteria
Hunters Point Shipyard, San Francisco, California

Substance [a,b]	STLC (mg/L)	TTLC (mg/kg)
Trichloroethylene	204	2,040
2,4,5-Trichlorophenoxypropionic acid	1.0	10

[a] STLC and TTLC values are calculated on the concentrations of the elements, not the compounds.

[b] In the case of asbestos and elemental metals, the specified concentration limits apply only if the substances are in a friable, powdered, or finely-divided state. Asbestos includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

[c] Excluding barium sulfate.

[d] If the soluble chromium, as determined by the TCLP set forth in 22 CCR Division 4.5, Appendix I of chapter 11, less than 5 mg/L, and the soluble chromium, as determined by the procedures set forth in 22 CCR Division 4.5, Appendix II of chapter 11, equals or exceeds 560 mg/L, and the waste is not otherwise identified as a RCRA hazardous waste pursuant to section 66261.100, then the waste is a non-RCRA hazardous waste.

[e] Excluding molybdenum disulfide.

Initial analysis of the ABM or unknown hazardous material is likely to consist of full TCLP and/or full totals analysis, depending upon the requirements of the disposal facility. Prior to disposal, the facility proposed for waste treatment or disposal will be contacted to identify its waste acceptance criteria. Some facilities require waste characterization analyses such as TCLP, while others require testing only to meet certain permit requirements or no testing at all. The disposal facility will also be consulted to determine initial sample frequency.

If the ABM or unknown hazardous material waste stream is uniform (based on initial testing as well as physical observations), the testing frequency may be reduced.

5.0 Material Management

5.1 Storage Time Limit

All ABM and/or other hazardous material found within the limits of disturbance will be excavated and storage time will be minimized to the extent practicable. ABM and/or other hazardous material will be removed from the site as soon as possible and in all circumstances will be removed from the site within 90 days from the date of generation. California regulations impose a 90-day hazardous waste accumulation time period regardless of how much hazardous waste is generated. Solid wastes shall be removed from the site as soon as possible.

5.2 Waste Storage Areas

Roll-off boxes, containers or stockpiles may be used for ABM and/or other hazardous material and will be placed in a secure designated temporary accumulation area (less than 90 days). Satellite accumulation rules found in 22 CCR 6626.34, require that:

- The containers are in good condition (no rusting or defects).
- Wastes are compatible with the container.
- Containers remain closed except when adding or removing wastes.
- Containers are not opened, handled, moved, or stored in a manner that may rupture or cause the container to leak.
- Areas used for container storage are inspected weekly. Inspections must be documented in field notebook.

Hazardous waste storage areas shall contain emergency equipment sufficient to respond to the hazard posed by the waste. Typical items in a hazardous waste storage area include fire extinguishers, decontamination equipment, PPE, portable eyewash, and an alarm system if radio equipment is not available to all staff working in storage area.

5.3 Labels

The labeling of ABM and/or other hazardous material containers will be in accordance with 49 Code of Federal Regulations 172, 173, and 178. Labels will include the type of waste, location where the waste was generated, and accumulation start date. Containers or roll-off boxes used to store/accumulate shall include one of the following labels:

- "Analysis Pending"—Temporary or handwritten label until analytical results are received and reviewed. This label shall include the accumulation start date.

- "Hazardous Waste"—Preprinted hazardous waste labels with the following information:
  - Accumulation start date
  - Generator name
  - USEPA identification number for site
  - Waste codes
  - For containers of less than 110 gallons, the manifest number must be on the label before transporting
- "Non-hazardous Waste"—Preprinted labels with the following information:
  - Accumulation start date
  - Generator name
  - USEPA identification number
  - Waste-specific information (e.g., contaminated soil)

5.4 Methods to Store Wastes

Wastes shall be stored in one of the following settings and according to the requirements described in the following sections. Additional Best Management Practices for stockpiles contained in the construction Stormwater Pollution Prevention Plan and Dust Control Plan may also apply.

5.4.1 Drums/Small Containers

- Drums and small containers of hazardous waste will be transported to the temporary accumulation areas on wood pallets and will be secured together with non-metallic bonding.
- Drums shall be inspected and inventoried upon arrival on site for signs of contamination and/or deterioration.
- Adequate aisle space (e.g., 30 inches) shall be provided for containers such as 55-gallon drums to allow the unobstructed movement of personnel and equipment. A row of drums should be no more than two drums wide.
- Each drum shall be provided with its own label.
- Drums shall remain covered except when removing or adding waste to the drum. Covers shall be properly secured at the end of each work day.
- Drums shall be disposed of with the contents. If the contents are removed from the drums for off-site transportation and treatment or disposal, the drums shall be triple-rinsed prior to reuse or before leaving the site, unless they are to be refilled with waste that are compatible with the material contained previously.

5.4.2 Stockpiles

ABM and/or other hazardous materials will not be stockpiled for longer than 90 days. At a minimum, the following procedures shall be followed when stockpiling ABM and/or other hazardous materials:

- Stockpiles shall be provided with liner, cover, and perimeter berm to prevent rupture and release or infiltration of liquids.
- Minimum 6-mil polyethylene sheeting shall be used for liners and covers.
- The perimeter berm, typically hay bales placed beneath the liner, shall be constructed to allow for collection of any free liquids draining from the stockpile.
- Accumulated free liquids shall be pumped (or otherwise removed) to a container.
- Covers and perimeter berms shall be secured in-place when not in use and at the end of each work day, or as necessary to prevent wind dispersion or runoff from major precipitation events.
- Construction materials for the stockpiles that contact waste shall be disposed of as contaminated debris.
- Accumulation dates shall be maintained in a field notebook for waste stored on site in stockpiles.

5.4.3 Roll-off Bins

- Roll-off bins shall be inspected upon arrival on site. Any roll-off bins arriving with contents shall be rejected.
- Roll-off bins for hazardous soils shall be provided with covers and disposable liners. Liners shall be disposed of as contaminated debris.
- When not in use, securely fastened covers shall be installed on all roll-off bins.
- Old labels shall be removed.
- Roll-off bins shall be inspected by the transporter after removal of the liner and shall be decontaminated in the event of evidence of liner failure.

5.5 Waste Storage Area Inspections

Areas used for waste storage shall be inspected for malfunctions, deterioration, discharges, and leaks that could result in a release. The inspection schedule will be:

- Daily inspection of containers, tanks, and roll-off bins (for leaks, signs of corrosion, or signs of general deterioration).
- Daily inspection of stockpiles (for liner and berm integrity).

Inspections shall be recorded in a field notebook, and record of inspection shall be maintained on site.

5.6 Additional Requirements for Low-level Radioactive Wastes

If the ABM is determined to be radioactive, additional measures for handling and storage will be implemented as required by federal and California law. Additional requirements will be determined in consultation with the Navy.

5.7 Additional Requirements for the Management of USTs

If unknown hazardous materials are determined to be USTs, they will be handled in accordance with the applicable regulations including but not limited to the following regulations:

- California Health and Safety Code (H&SC), Division 20, Chapter 6.9 (Section 25280 et.seq.)
- CCR, Title 23, Division 3, Chapter 16 (Section 2610 et.seq.)
- California State Water Resources Control Board, Leaking Underground Fuel Tank Manual.
- SFDPH Underground Storage Tank Removal Regulations. Contact telephone 415/252-3893.

6.0 Transportation and Disposal

6.1 Transportation and Disposal of Waste Stream

Each transportation vehicle and load of waste shall be transported and disposed of in accordance with the Transportation and Disposal Plan.

6.2 Additional Requirements for Low-level Radioactive Wastes

If the ABM or unknown hazardous material is determined to be radioactive, additional measures for transportation and disposal will be implemented as required by federal and California law. Additional requirements will be determined in consultation with the Navy.

7.0 Recordkeeping and Reporting

7.1 Initial Notifications and Reporting

As described in Section 4.0, the SFDPH and Navy will be notified immediately upon verification of ABM. In addition, the SFDPH will be notified by fax, or phone within 24 hours when any unknown hazardous material is encountered at the site. A sample notification form is provided as Attachment 2 of this report.

Waste disposal reporting to SFDPH will be in accordance with the Disposal Plan and comply with the *Hunters Point Reuse Plan Final Environmental Impact Report* Mitigations Measures 8A (Navy 2001) and shall, at a minimum, include a list of landfills used and contact information, tracking spreadsheets (or equivalent) that include: date of excavation, location of excavation, quantity, soil type, bill of lading or manifest number, transporter, and landfill.

7.2 Location

The limits of ABM and/or unknown hazardous materials will be noted in field logbooks during excavation as described in Section 5.0. Field notes, and surveyed or GPS limits of ABM or unknown hazardous material, will be provided to SFDPH for inclusion in their geographic information system.

7.3 Analytical Results

Results of ABM and/or unknown hazardous material characterization analyses will be provided to the SFDPH for inclusion in their database.

7.4 Transportation and Disposal Log

Transportation of wastes shall be inventoried the day of transportation from the site. A carbon copy of the initial manifest form for each load will be retained on site and attached to the daily construction report. A Lennar representative will sign all required transportation manifests.

8.0 References

Naval Sea Systems Command (NAVSEA). 2004. *Draft Final Historical Radiological Assessment, Volume II, History of the Use of General Radioactive Materials, 1939 – 2003, Hunters Point Shipyard*, February.

United States Department of the Navy (Navy). 2001. *Final Environmental Impact Report for the Disposal and Reuse of Hunters Point Shipyard.* June.

Attachment 1
Material Specification Sheet and Material Safety Data Sheet for Black Beauty® Coal Slag Abrasive

Attachment 2
Unknown Hazardous Material Notification Form

ABM OR UNKNOWN HAZARDOUS MATERIAL ENCOUNTER RECORD

Fax completed form to:

SFDPH Attn: Amy Brownell 415-252-3964 (fax) 415-252-3967 (phone)	NAVY Attn: Patrick Brooks 619- (fax) 619-532-0930 (phone)	CH2M HILL Attn: Anne Estabrook 510-622-9146 (fax) 510-587-7646 (phone)

Contractor	Date
Supervisor	
Location	
Size, type, and depth of utilities encountered	
Activity in process when ABM was found	
Estimated quantity of ABM ☐ Removed ☐ Remaining	
GPS Coordinates	

SITE PLAN

Scale: 1″ =